L 43932-65 EWG(j)/EWG(r)/EWT(l)/FS(v)-3/EWG(v)/EWG(a)-2/EWG(c) Pb-4/Pe-5 DD

ACCESSION NR: AP5011543 UR/0020/65/161/005/1231/1234

AUTHOR: Shkol'nik, R. Ya.; Doman, N. G.; Spektorov, K. S.; Lin'kova, Ye. A. 40 39 B

TITLE: Intermediate products of photosynthesis of a synchronous Chlorella culture at different stages of development

SOURCE: AN SSSR. Doklady, v. 161, no. 5, 1965, 1231-1234

TOPIC TAGS: photosynthesis, Chlorella, algae, phosphoglyceric acid, chromatography

ABSTRACT: Experiments were conducted to determine the inclusion of C^{14} in the primary products of photosynthesis of a synchronous Chlorella culture at different stages of its development. Chlorella pyrenoidosa was kept at 39C with a light-dark cycle of 8:16 hr. Four stages of development of the culture were selected, from the beginning of the light period to the formation of new autospores in the early part of the dark period. After filtration of a 5-ml suspension of each stage, the chlorella-coated filter was placed in a chamber at room temperature with 15% $C^{14}O_2$ in the air and exposed to light for periods of 2 and 10 sec, and 1 and 5 min. Intermediate products were fixed and extracted with alcohol. The activity of radioactive substances, both soluble and insoluble in alcohol, was determined. A large percentage of radioactivity (25—41%) was observed in the insoluble residue

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L 43932-65

ACCESSION NR: AP5011543

of different stages after 2-sec exposure. This finding does not agree with literature data on the solubility of early photosynthesis products. The failure of phosphoglyceric acid to pass into the alcohol solution may be explained by the presence of early phosphorus-containing products of photosynthesis in combined form which are insoluble in acidified alcohol. As the culture develops, the rate of photosynthesis, i.e., the rate of C^{14} absorption per volumetric unit of the suspension, increases steadily except in the third stage (7 hr, 20 min of illumination). Of all durations of exposure to light, fixation of $C^{14}O_2$ is greatest in the fourth stage (9 hr, 20 min after the beginning of illumination). Chromatographic analysis of alcohol-soluble intermediate products of photosynthesis after 2-sec exposure showed one extremely radioactive compound. In the autospore stage, it appears in the zone of phosphoenolpyruvic acid, and in all other stages, in the zone of α-analine. Determination of the radioactivity of substances of the alcohol fraction, some of which are soluble and some insoluble in water, showed that 60—80% of the radioactivity for all exposures and at all stages of development is located in the water-soluble substances. Orig. art. has: 2 figures and 1 table. [JS]

ASSOCIATION: Institut biokhimii im. A. N. Bakha Akademii nauk SSSR (Institute of Biochemistry, Academy of Sciences SSSR)

Card 2/3

L 43932-65

ACCESSION NR: AP5011543

SUBMITTED: 19Jun64 ENCL: 00 SUB CODE: LS

NO REF SOV: 005 OTHER: 005 ATD PRESS: 3248

LL

Card 3/3

L 7056-66 EWT(1)/FS(v)-3 DD

ACC NR: AP5028095 SOURCE CODE: UR/0326/65/012/006/1005/1011

AUTHOR: Shkol'nik, R. Ya.; Doman, H. G.; Spektorov, K. S.; Lin'kova, Ye. A.

ORG: Institute of Biochemistry im. A. N. Bakh, Academy of Sciences, SSSR; Institute of Plant Physiology im. K. A. Timiryazev, Academy of Sciences, SSSR, Moscow (Institut biokhimii Akademii nauk SSSR i Institut fiziologii rasteniy Akademii nauk SSSR)

TITLE: Insoluble products of photosynthesis of a synchronous Chlorella pyrenoidosa culture at different stages of its development

SOURCE: Fiziologiya rasteniy, v. 12, no. 6, 1965, 1005-1011

TOPIC TAGS: photosynthesis, chlorella, synchronous culture, chromatography

ABSTRACT: As part of the continuing effort to determine the intermediate products of photosynthesis, an attempt was made to identify those radioactive products of photosynthesis which cannot be extracted from a synchronous culture of Chlorella pyrenoidosa with acidified alcohol (25C). A chart of the solvents used in chromatography and the steps taken is given in the original article. It was found that the composition of the residue depends both on the duration of exposure to light and on the stage of development of the culture. Analysis showed this residue to consist of: 1) phosphorylated sugars and phosphoglyceric acid (both of which are partially extracted by acidified alcohol at room temperature); 2) substances of the polysaccharide type; 3) substances of a protein character; and 4) certain unknown substances, which remain

 UDC: 581.132

L 7056-66

ACC NR: AP5028095

at the starting point during chromatography even when several solvents are used. Polysaccharide-type substances appeared in the insoluble residue after only 2 sec of photosynthesis. After 5 min of photosynthesis in $C^{14}O_2$, the composition of the insoluble residue of a synchronous Chlorella culture in the fourth stage of development differed sharply from the composition of such a residue in the first and third stages of development. Sugars present in the residue as a result of the hydrolysis of polysaccharides also differed in composition depending on the developmental stage. Note: the four developmental stages of a synchronous culture of Chlorella pyrenoidosa selected were: 1) autospores (20 min of illumination); 2) 3 hr, 20 min of illumination; 3) 7 hr, 20 min of illumination; and 4) end of divison inside the mother cells and beginning of egress of autospores (9 hr, 20 min of illumination). Orig. art. has: 4 figures and 1 table. [JS]

SUB CODE: LS/ SUBM DATE: 15Oct64/ ORIG REF: 004/ OTH REF: 005/ ATD PRESS: 4143

BC

Card 2/2

LINKOVA, Z.

BOUSKA, J.; LINK, F.; LINKOVA, Z. "Ephemerides of Lunar Eclipses of 1954." p. 170. (Biulleten Astronomicheskikh Institutov Chekhoslovakii. Bulletin of the Astronomical Institutes of Czechoslovakia. Vol. 4, no. 6, Dec. 1953. Praha).

East European Vol. 3, No. 6 4

SO: Monthly List of Russian Accessions/ Library of Congress, June 1957, Uncl.

Linkova, Z

4

Link, F. and Linková, Z. (both, *Astronom. Inst., Ondrejov*). Agrandissement de l'ombre terrestre pendant les éclipses de lune, Pt. 1, Influences météoriques. [Increase of the earth's shadow during lunar eclipses, Pt. 1, Meteoric influences.] *Bulletin of the Astronomical Institutes of Czechoslovakia*, Prague, 5(4):82–84, July 1, 1954. fig., table, 14 refs. Russian summary p. 83–84. DLC—Increase in the earth's shadow during 57 lunar eclipses observed from 1802 to 1950 are tabulated. The annual variation of increase in the earth's shadow is graphically presented and compared with annual meteoric activity values, showing a qualitative agreement between the two phenomena. *Subject Heading:* 1. Meteor-earth's shadow relationships.—*G.T.*

1/1

450

LINKOVA, Z

SCIENCE

PERIODICALS: STUDIA GEOPHYSICA ET GEODAETICA. Vol. 3, no. 1. 1959

LINKOVA, Z.: Astronomical methods in historical climatology; solar and climatic period of 400 years. In French, p. 43

Monthly list of East European Accessions (EEAI) LC, Vol. 8, No. 5, May 1959, Unclass

SOV/177-58-2-11/21

17(10)

AUTHORS: Frankfurt, A.I., Colonel in the Medical Service. Professor;
Lin'kova, Z.D.
Okonishnikova, O.A., Major in the Medical Service, and
Protyanova, K.D.,

TITLE: The Condition of the Liver, Pancreas, and Kidney in Cases of Chronic Gastritis

PERIODICAL: Voyenno-meditsinskiy zhurnal, 1958, Nr 2, pp 66-69 (USSR)

ABSTRACT: The article deals with the results of observation of 115 patients, similar in age, working conditions and eating habits, with chronic gastritis, showing no indications in anamnesis of any effects on the liver, pancreas, or kidneys. The subjects were all men 20 - 25 years old, of which 20 had been ill up to 6 months, 27 from 7 - 12 months, 50 from 1 - 3 years, and 18 for more than 3 years. 76% showed objective signs of chronic gastritis, while the others showed fewer symptoms. 50 showed an increase in the acidity of stomach secretions, 31 were normal in this respect, 17 showed a decrease in acidity, and in 17 free hydrochloric acid was absent. The

Card 1/2

The Condition of the Liver, Pancreas, and Kidney in Cases of Chronic Gastritis

authors describe the method for determining the condition of the liver, pancreas and kidneys, performed at registration and discharge from the hospital. The results are described in the text. Some disturbance of the normal functioning of these organs often accompanies chronic gastritis. The liver is particularly affected, and is the slowest to return to normal, while the kidneys are least affected and return to normal more quickly. The authors suggest that in view of the frequency of disturbance of the liver accompanying chronic gastritis, complex treatment be used.

HEJNAL, J.; HRDLICKA, Z.; SCHINDLER, J.; CERVINKA, F., Technicka spoluprace: Z. Divis, J. Hnatek, M. Hubkova, Z. Linkova, L. Rablova, H. Tazilova, H. Vidmarova, A. Zednikova.

Antibiotics in preoperative preparation of the large intestine. Rozhl. chir. 38 no.8:507-515 Aug 59.

1. Ustav klinicke a experimentalni chirurgie v Praze Ustav mikrobiol. a epidemiol. [redacted] v Praze.
(ANTIBIOTICS, ther.) (COLON, surg.)

NIKOLAYEVA, N.S., kand.tekhn.nauk; MOGILEVSKIY, Ye.M., kand.tekhn.nauk; LIN'KOVA, Z.K.

Determining the degree of cellulose polymerization by the specific viscosity of its solutions and its organic base. Tekst.prom. 18 no.4:9-11 Ap '58. (MIRA 11:4)
(Rayon) (Nylon)

NIKOLAYEVA, N.S.; MOGILEVSKIY, Ye.M.; VERETENNIKOVA, T.P.; LIN'KOVA, Z.K.

Spinning solutions of cellulose in quaternary ammonium bases. Khim.volok. no.4:26-29 '59. (MIRA 13:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.

(Rayon) (Ammonium compounds)

NIKOLAYEVA, N.S.; MOGILEVSKIY, Ye.M.; LIN'KOVA, Z.K.

Study of the properties of cellulose solutions in complex iron - tartaric acid - sodium hydroxide. Khim.volok. no.4:20-22 '60. (MIRA 13:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.

(Cellulose)

MOGILEVSKIY, Ye.M.; NIKOLAYEVA, N.S.; AFONINA, T.M.; LIN'KOVA, Z.K.

Modification of the properties of viscose fibers. Khim.volok. no.1: 37-40 '61. (MIRA 14:2)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.

(Rayon)

AFONINA, T.M.; NIKOLAYEVA, N.S.; MOGILEVSKIY, Ye.M.; LIN'KOVA, Z.K.

Effect of the structure of viscose fibers on the degree of their acetylation. Khim.volok. no.2:30-33 '62. (MIRA 15:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.

(Viscose) (Acetylation)

MOGILEVSKIY, Ye.M.; NIKOLAYEVA, N.S.; AFONINA, T.M.; DEMINA, N.V.; LIN'KOVA, Z.K.

Modification of the properties of viscose fibers by means of partial acetylation. Khim.volok. no.2:30-32 '63. (MIRA 16:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna.

(Rayon) (Acetylation)

MIKHAYLOV, N.V.; MOGILEVSKIY, Ye.M.; NIKOLAYEVA, N.S.; SUROV, N.A.; MAYBORODA, V.I.; LIN'KOVA, Z.K.; BOCHKINA, V.S.

Properties and production methods of polynosic fibers. Khim. volok. no.6:3-9 '65. (MIRA 18:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut iskusstvennogo volokna. Submitted March 2, 1965.

L 38119-66 EWT(m)/EWP(j)/T RM

ACC NR: AP6012414 (A) SOURCE CODE: UR/0183/65/000/006/0003/0009

AUTHOR: Mikhaylov, N. V.; Mozilevskiy, Ye. M.; Nikolayeva, N. S.; Surov, N. A.; Mayboroda, V. I.; Lin'kova, Z. K.; Bochkina, V. S.

ORG: VNIIV

TITLE: Properties and methods of making rayon filaments

SOURCE: Khimicheskiye volokna, no. 6, 1965, 3-9

TOPIC TAGS: synthetic fiber, organic synthetic process, textile, textile engineering, textile industry machinery

ABSTRACT: Various patented processes for obtaining viscose fibers similar to cotton were evaluated. Basic technological parameters were worked out for a 1-bath and 2-bath method of forming and drawing xanthogenate filaments. Requirements for construction of spinning equipment were determined. Viscose filaments whose physical-mechanical properties compared to those of foreign rayon filaments of average strength were obtained on pilot equipment. Orig. art. has: 5 tables.

SUB CODE: 11, 13/ SUBM DATE: 02Mar65/ ORIG REF: 003/ OTH REF: 022

UDC: 677.463

Card 1/1

S/193/60/000/002/006/013
A004/A001

AUTHOR: Linkovskaya, Ts. B.

TITLE: The BSh-62M (VSh-62M) ball grinding automatic

PERIODICAL: Byulleten' tekhniko-ekonomicheskoy informatsii, no. 2, 1960, 24-25

TEXT: In 1959 the Vitebskiy stankostroitel'nyy zavod im. Kirova (Vitebsk Machine Tool Plant im. Kirov) built the VSh-62M automatic intended for the grinding of untreated balls prior to hardening (soft grinding) and hardened balls (hard grinding) from 2 to 12 mm in diameter. The grinding automatic is composed of the bed, grinding stock, stationary disk stock and elevator. The grinding stock is mounted on the lefthand side of the bed, the stationary disk stock on the right. The elevator is an independent unit placed beside the grinding machine, and intended for the continuous supply of balls to the grinding machine during the machining process. Cast iron ladles are fitted inside the elevator drum feeding the balls via a chute into the distributing box. The drum rotates actuated by V-belts from an electromotor. Stepless regulation of the rotation speed of the elevator drum is effected by a synchronous friction coupling and a centrifugal regulator. The grinding stock spindle is mounted on two pivot bearings, the front

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S/193/60/000/002/006/013
A004/A001

The ВШ-62М (VSh-62M) ball grinding automatic bearing consisting of four radial thrust bearings, while a ball bearing is fitted at the rear. The disk carrying the grinding wheel is centered on the driving face plate by hardened steel rings and is fastened with bolts. The hydraulic cylinder is fastened on the spindle axle to the left face end of the spindle stock. The stationary disk stock is a casing in the bore of which the tail spindle with fitted-on face plate is mounted on antifriction bearings. The cast iron disk-tool is screwed onto the face plate. The tail spindle of the stationary stock is connected to the hydraulic cylinder rod by a bayonet joint. The distance between the grinding wheel and the stationary disk is adjusted with the aid of a nut mounted on the pull rod of the bayonet joint. The gaged pressure of the grinding wheel on the balls being machined is steplessly regulated with the aid of the hydraulic system. The body of the collecting knife, which collects the balls, is clamped in the slots of the face plate of the stationay disk stock. The distributing device, intended for the distribution of the ball flow into the concentric grooves of the disk-tool, is inserted in the lower part of the body. The following technical data are given: dimensions of the grinding wheel (D x d x h) 600 x 290 x 100 mm; grinding wheel rotation speeds - 60, 85, 120, 175, 245, 345 rpm; dimensions of the disk-tool - 600 x 250 x 100 mm; range of drum revolutions - 1.31 - 5.3 rpm; weight of loaded ball lot - 100 kg, power of electromotors, kw:

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S/193/60/000/002/006/013
A004/A001

The BIII-62M (VSh-62M) ball grinding automatic

of the grinding wheel - 10, of the elevator - 0.6, of the hydraulic drive - 1.0, of the cooling pump - 0.125; overall dimensions (length x width x height) - 2,890 x 1,640 x 1,540 mm; weight (elevator included) - 4,100 kg. The improved VSh-62M design made it possible, due to the installed sorting device, the utilization of an original coolant cleaning device, and the reinforcement of the hydraulic elements, to increase the efficiency of the machine by 1.53 times, raising the output to 46 kg balls/hour compared to 30 kg of former models. There is 1 figure.

Card 3/3

LINKOVSKIY, G. B.

G. B. LINKOVSKIY, "Estimate of the entropy and distribution function of a one-dimentional random quantity represented by several empirie moments." Scientific Session Devoted to Radio Day, May 1958, Trudrezervizdat, Moscow, 9 Sep. 58

A number of investigators (Shannon, Wheeler and others) estimated the maximum of the "differential entrpy" of an unknown distribution of a one-dimensional random variable represented by several theoretic initial moments. On this basis, an estimate is made of the maximum of the above mentioned entrophy of a random quantity represented by several empirical distribution moments. Here, the Kramer theorem on the asymptotic normality of a random quantity which is a function of the sample moment is used. In addition, an estimate is made of the distribution function for the assignment of several expirical moments by an analogous method. The justification for this is a particular case of the Kramer inequality which is a generalization of the well-known Chebyshev inequality.

LINKOVSKIY, G.B.

Information by continuous communications according to Shannon. Nauch.dokl.vys.shkoly; radiotekh. i elektron.no.1:12-15 '58. (MIRA 12:1)

1. Institut radiotekhniki i elektroniki AN SSSR.
(Information theory)

LINKOVSKIY, G.B.

Information-storage problem in systems of self-contained "memory."
Nauch.dokl.vys.shkoly; radiotekh. i elektron.no.1:86-89
' 58. (MIRA 12:1)

1. Institut radiotekhniki i elektroniki AN SSSR.
(Information theory)

FLEYSHMAN, B.S.; LINKOVSKIY, G.B.

Estimation of the maximum permissible value of the entropy of an unknown distribution represented by several theoretical moments. Sbor. trud. NTORiE no.2:87-99 '58. (MIRA 16:6)

(Information theory) (Television)

LINKOVSKIY, G.B.

Estimation of the entropy and distribution function of a one-dimensional random value represented by several empirical moments. Sbor. trud. NTORiE no.2:100-109 '58.
(MIRA 16:6)

(Information theory) (Telecommunication)

LINKOVSKIY, G.B.

Evaluating the entropy of an one-dimensional distribution represented by several empiric moments. Nauch.dokl.vys.shkoly; radiotekh. i elektron. no.2:3-6 '58. (MIRA 12:1)

1. Institut radiotekhniki i elektroniki AN SSSR.
(Information theory)

LINKOVSKIY, G.B.

Determination of the quantity of information $I(\eta, \xi)$ in a random object η relative to object ξ in a case of continuous communications. Sbor. trud. NTORiE no.2:12-19 '58. (MIRA 16:6)

(Information theory)

LINKOVSKIY, G.B.

Brain as a system of autonomous "memory". Biofizika 3 no.4:385-390 '58 (MIRA 11:8)

1. Institut radiotekhniki i elektroniki AN SSSR, Moskva.
(BRAIN)
(MEMORY)

SOV-109-3-4-15/28

AUTHORS: Fleyshman, B. S. and Linkovskiy, G. B.

TITLE: Maximum Entropy of an Unknown Discrete Signal with a Given First Moment (Maksimum entropii neizvestnogo diskretnogo raspredeleniya pri zadanii pervogo momenta)

PERIODICAL: Radiotekhnika i Elektronika, 1958, Vol 3 , Nr 4, pp 554-556 (USSR)

ABSTRACT: It is assumed that a random function ξ described by the matrix on p 554, where x_i are given and $p_i > 0$, such that the sum of p_i fulfils Eq.(1), has a known first moment, a_1 ; this is expressed by:

$$a_1 = \sum_{i=0}^{i=n-1} x_i p_i \quad . \qquad (2)$$

The entropy of this random function is given by Eq.(3). For

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Maximum Entropy of an Unknown Discrete Signal with a Given First Moment

a given a_1 the entropy has a maximum when the function satisfies Eqs.(7) and (8). If the discrete distribution is such that the terms x_i are given by arithmetic progression, as represented by Eq.(10), the maximum entropy for $n \to \infty$ can be expressed by Eq.(22) or Eq.(24). There are 6 references, 4 of which are Soviet and 2 English.

SUBMITTED: January 3, 1957

1. Radio signals--Mathematical analysis 2. Functions--Applications
3. Arithmetic progressions--Applications

32469
S/044/61/000/010/035/051
C111/C222

16.1000 6,4000

AUTHORS: Siforov, V.I., Fleyshman, B.S., and Linkovskiy, G.B.

TITLE: The optimal reception of a parameter which is transferred through a channel with noises containing multiplicative, additive and time components

PERIODICAL: Referativnyy zhurnal. Matematika, no. 10, 1961, 29, abstract 10 V 176. ("Sb. tr. Nauchno tekhn. o-vo radiotekhn. i elektrosvyazi im. A.S. Popova", 1959, vyp. 3, 3-17)

4

TEXT: The authors consider the transfer of the signal $f_\lambda(t)$ ($f_\lambda(t)$ is a not random known function of the time depending on the parameter λ) through a multiray channel at the outlet of which the signal

$$y(t) = \sum_{i=1}^{k} \alpha_i(t) \cdot f_\lambda\left[t - \tau_i(t)\right] + \gamma(t)$$

is obtained, where $\gamma(t)$, $\alpha_i(t)$, $\tau_i(t)$ are independent random processes which are called the additive, multiplicative and time compo-

Card 1/3

The optimal reception of a parameter ...

nents of the noise. It is assumed that the processes $\alpha_i(t)$ and $\tau_i(t)$ for different indices i are equally distributed and that $k \gg 1$. It is demanded that the parameter λ can be estimated in virtue of the realization y(t) on a certain time interval. From y(t) the authors go over to values taken in discrete lattice points $t_1 \ldots t_n$ and they assume that the values of each of the considered processes are independent in the points t_i and t_j $(i \neq j)$. The for the estimation it is proposed to use the method of the maximal credibility and the momentum method. The equation for the maximal credibility is written, where the conditions under which it is deduced are formulated very unexact so that the limits of applicability of the obtained results remain unclear. Beside of general remarks on the known properties of the estimations of maximal credibility the authors give concrete examples in which further properties of these estimations are discussed.

Reviewer's remark : The authors assume that the independence of the values

of the processes $\alpha_i(t)$, $\tau_i(t)$, $\vartheta(t)$ is guaranteed if the distances $t_{i+1} - t_i$ are chosen greater than the minimal correlation interval of the considered processes. It is evident that for this aim $t_{i+1} - t_i$ must be chosen at least greater than the maximal one of these intervals.

[Abstracter's note : Complete translation.]

Card 3/3

32400
S/044/61/000/010/036/051
C111/C222

(3403)

AUTHOR: Linkovskiy, G.B.

TITLE: On the ideal reception of a parameter transmitted through a communication channel for a small number of rays

PERIODICAL: Referativnyy zhurnal. Matematika, no. 10, 1961, 29, abstract 10 V 177. ("Sb. tr. Nauchno-tekhn. o-vo radiotekhn. i elektrosvyazi im. A.S. Popova", 1959, vyp 3, 18-33)

TEXT: The author considers the same problem as in the article of the author and others (abstract 10 V 176) with the difference that here k is not necessarily large. The case $k = 1$ is considered separatedly. Under certain additional assumptions the author writes the equation of the maximal credibility for the parameter λ ; the equation has a very complicated form.

Reviewer's remark : The author assumes that for an enlargement of the number of observation points (transition to a continuous observation) the estimation of the maximal credibility with respect to the probability converges to the real value. This misunderstanding is based on

Card 1/2

32470
S/044/61/000/010/036/051
On the ideal reception of a parameter ... C111/C222

the fact that the author assumes that for a diminution of the distance between the observation points the values of each of the processes in these points remain further independent, in general that must not prove right.

[Abstracter's note : Complete translation.]

Card 2/2

32471
S/044/61/000/010/037/051
C111/C222

16.7000 (1403)

AUTHORS: Fleyshman, B.S., Linkovskiy, G.B., and Sindler, Yu.B.

TITLE: On the question of the optimal statical estimation of the characteristics of a communication channel with a multi-ray propagation

PERIODICAL: Referativnyy zhurnal. Matematika, no. 10, 1961, 29, abstract 10 V 178. ("Sb. tr. Nauchno-tekhn. o-vo radiotekhn. i elektrosvyazi im. A.S. Popova", 1959, vyp 3, 34-42)

TEXT: The authors consider the same situation as in the preceding paper of the authors (abstract 10 V 176) ; the notations of this abstract are used but another problem is given. The actual value of λ is assumed to be known. An estimation for the dispersion of the "multiplicative" component of the noise $\alpha_i(t)$ is sought. Under the same assumptions as in the mentioned paper the authors use the method of the maximal credibility and the momentum method for the determination of the estimation of dispersion. The case where not all processes $\alpha_i(t)$ are equally

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distributed and there exists a process $\alpha_1(t)$ the dispersion of which is greater than for all other $\alpha_i(t)$ is considered separatedly. Some examples are considered. The remarks on the unclearness of the formulations made in abstract 10 V 176 (as well as the remark of the reviewer with respect to this abstract) hold also for the present paper.

[Abstracter's note : Complete translation.]

Card 2/2

9.3230
9.3260
6.9500

S/058/61/000/004/028/042
A001/A101

AUTHOR: Linkovskiy, G.B.

TITLE: Periodic motions of non-linear oscillation systems described by functional equations with delay argument

PERIODICAL: Referativnyy zhurnal, Fizika, no 4, 1961, 372-373, abstract 4Zh284 ("Sb. tr. Nauchno-tekhn. o-vo radiotekhn. i elektrosvyazi im. A.S. Popova", 1959, no 4, 211 - 260)

TEXT: A number of practical problems, in particular the necessity of designing non-linear oscillation systems with autonomous "memory", necessitate the systematic study of periodic motions of non-linear oscillation systems described by functional equations with delay argument. These non-linear oscillation systems can perform both forced and natural oscillations. The study of both types is necessary to satisfy the requirements of the practice and to point out different possibilities of the motions and conditions of their realization. Some new possibilities of their application are indicated. This pertains to the problem of

Card 1/2

Periodic motions of non-linear oscillation systems... S/058/61/000/004/028/042
A001/A101

dynamical information storage in the autonomous "memory" systems and application of non-linear natural oscillation systems to quantization, coding and amplitude filtration of signals.

[Abstracter's note: Complete translation.]

Card 2/2

9.3100
9.3260

S/058/61/000/004/029/042
A001/A101

AUTHOR: Linkovskiy, G.B.

TITLE: On approximate solution of some problems of non-linear electric oscillations

PERIODICAL: Referativnyy zhurnal. Fizika, no 4, 1961, 373, abstract 4Zh285 ("Sb. tr. Nauchno-tekhn. o-vo radiotekhn. i elektrosvyazi im. A.S. Popova", 1959, no 4, 261 - 267)

TEXT: The author proposes a non-asymptotical method of non-linear mechanics for approximate solution of a number of problems of electrical and mechanical oscillations, in particular electronics. In the beginning motions with conventional velocities are considered, and then the relativistic motion of electron in a variable field.

[Abstracter's note: Complete translation.]

/B

Card 1/1

05283
SOV/170-59-7-14/20

10(2)

AUTHOR: Linkovskiy, G.B.

TITLE: On the Calculation of a Non-Cylindrical Ejector

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1959, Nr 7, pp 87 - 91 (USSR)

ABSTRACT: The author discusses first the case of liquid ejector and bases his calculation on three equations: 1. Change in the momenta of liquids, 2. Constancy of discharge, and 3. Conservation of energy. The rigorous determination of the value of average pressure of the mixed liquid on the surface of walls in the mixer chamber is theoretically very difficult, if this surface is not cylindrical. Therefore, the author makes a simplifying assumption on the value of this pressure and finds an approximate solution for the velocity of mixed liquid W (Formula 12). Then the case of a so-called "pre-acoustical" ejector is considered and equations are derived under an assumption of the adiabatic flow of gas. The system can be solved by means of gas-dynamical functions proposed by B.M. Kiselev [Ref 3], but the author presents a straight forward solution, Formula 17,

Card 1/2

On the Calculation of a Non-Cylindrical Ejector

05283
SOV/170-59-7-14/20

which is applicable for approximate calculations.
There are: 1 diagram and 4 references, 3 of which are Soviet and 1 German.

ASSOCIATION: Institut radiotekhniki i elektroniki AN SSSR (Institute of Radiotechnics and Electronics of the AS USSR), Moscow.

Card 2/2

LINKOVSKIY, G.B.

Stability of the memory of brain considered as a system of autonomic "memory". Biofizika 5 no. 6:655-662 '60.
(MIRA 13:10)

1. Institut radiotekhniki i elektroniki AN SSSR.
(MEMORY)

S/044/60/000/012/010/014
C 111/ C 333

AUTHORS: Fleyshman, B. S, Linkovskiy, G. B.

TITLE: The estimation of the maximal possible value of the entropy of an unknown distribution which is represented by some theoretical moments

PERIODICAL: Referativnyy zhurnal, Matematika, no. 12, 1960, 130, abstract 14133. (Sb. tr. Nauchno-tekhn. o-va radiotekhn. i elektrosvyasi im. A. S. Popova, 1958, vyp. 2, 87-99

TEXT: The authors pose the problem of calculating the minimum of the differential entropy of a variable which is given on the interval (a,b) under fixation of some of its moments. The problem is reduced to the solution of a system of transcendental equations with the usual methods of the calculus of variations. The cases, where 1.) the first moment is given, 2.) $b = \infty$ and the two first moments are given, 3.) $a = -\infty$, $b = -\infty$ and a moment of arbitrary order is given, are separately considered. An explicit answer is obtained in the last case.

[Abstracter's note: Complete translation.]

Card 1/1

16.6100 16.6200

S/044/60/000/012/009/014
C 111/ C 333

AUTHOR: Linkovskiy, G. B.

TITLE: The estimation of the entropy and of the distribution function of a unidimensional random variable which is represented by some empiric moments

PERIODICAL: Referativnyy zhurnal, Matematika, no. 12, 1960, 130, abstract 14132. (Sb. tr. Nauchno-tekhn. o-va radiotekhn. i elektrosvyazi im. A. S. Popova, 1958, vyp 2, 100-109)

B

Text: The author uses the formerly obtained value of the maximum of the differential entropy for given moment and the well-known theorem on asymptotic normality of the function of the empiric moment and gives a confidence estimation from above for the differential entropy for a given empiric moment. In the second part of the paper which is connected with the first part by nothing, the author obtains a consequence of the generalized inequality of Chebyshev. The title of the paper does not perfectly correspond to its content, since the estimations of the distribution function on the basis of empiric moments are not given in the paper.
[Abstracter's note: Complete translation.]

Card 1/1

28207
S/194/61/000/005/034/078
D201/D303

16.6800 (1253, 1327, 1024)

AUTHOR: Linkovskiy, G.B.

TITLE: Periodic motions of non-linear oscillating systems described by functional equations with delayed argument

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 5, 1961, 30, abstract 5 V258 (Sb. tr. Nauchno-tekhn. o-vo radiotekhn. i elektrosvyazi im. A.S. Popova, 1959, no. 4, 211-260)

TEXT: Forced and free oscillations of non-linear oscillating systems described by functional equations with delayed argument are analyzed. It is shown that for a given coupling of the delay with the parameters of the system, periodic motions of the system are possible which are of the harmonic type. The following problems are considered: Periodic repetition of rectangular pulses of arbitrary length in a non-linear oscillating system, free oscillations

Card 1/2

Periodic motions of non-linear...

in the form of step-pulses, the possibility of realizing periodic repetition of continuous pulses of arbitrary shape in a non linear oscillating system with variable delay, the simultaneous presence of pulses in the system of an autonomous "memory". The transients are analyzed in a non-linear oscillating system, whose motion satisfies a proportional equation with a delayed argument. An analysis is given of the possibility of obtaining non-linear dispersionless oscillating systems of an "autonomous" memory which could memorize a multi-step pulse. It is shown that an oscillating system, designed for memorizing a certain continuous pulse, degenerates into a specific oscillating system which is actually a system of absolute memory. The possibility is considered of utilizing the existence of periodic motion for quantizing purposes, encoding and amplitude filtering of the signal. 11 references. [Abstracter's note: Complete translation]

Card 2/2

13.2900 also 1331

26.4400

S/106/61/000/009/[illegible]
A055/A127

AUHTOR: Linkovskiy, G.B.

TITLE: Confidence intervals for the average operation time of a system of elements with exponential law of reliability

PERIODICAL: Elektrosvyaz', no. 9, 1961, 69 - 70

TEXT: In this article the author investigates the construction of confidence intervals, the analysis being essentially based on the works of B.R. Levin: [Ref. 1: Sredneye vremya raboty sistemy elementov nadezhnost' kotorykh izmenyayetsya po eksponentsial'nomu zakonu (Average Operation Time of a System of Elements Whose Reliability varies According to the Exponential Law) Elektrosvyaz', 1958, no. 8 and Ref. 6: O povyshenii nadezhnosti sistem putem rezervirovaniya (Increasing the Reliability of Systems by means of Reservation), Elektrosvyaz', 1957, no. 11] [Abstracter's note: no explanation is given of some of the symbols and subsripts used in the article]. One element. - The average operation time Tj of an element in the case of the exponential law of reliability is a parameter of the probability density:

Card 1/6

Confidence intervals for the average .....

$$p_{\xi}(t) = T_j^{-1} \exp(-tT_j^{-1}). \quad (1)$$

The optimum processing of the random magnitudes t_1, t_2 .... t_N by the versimilitude-maximum method [Ref. 2: G. Kramer, Matematicheskiye metody statistiki (Mathematical methods of statistics), IIL, 1948] gives the empirical value:

$$T_j^* = N^{-1} \sum_{i=1}^{N} t_i \quad . \quad (2)$$

The confidence interval will be equal to:

$$P = P\left(T_j^* - u\sqrt{DT_j^*} < T_j < T_j^* + u\sqrt{DT_j^*}\right) = \gamma_{N-1}\left[\frac{N(T_j^* + u\sqrt{DT_j^*})}{T_j}\right] - \gamma_{N-1}\left[\frac{N(T_j^* - u\sqrt{DT_j^*})}{T_j}\right], \quad (3)$$

Card 2/6

where $\gamma_\alpha(z)$ is a reduced incomplete gamma function [Ref. 3: Dunin, I. V., and N.V. Smirnov, Teoriya vercyatnosti i matematicheskaya statistika v tekhnike (Probability law and mathematical statistics in technics) G.I.T.T.L., 1955]. Since T_j^* is "assymetrically normal", it is possible to use a simpler formula:

$$P = P\left(T_j^* - u\sqrt{DT_j^*} < T_j < T_j^* + u\sqrt{DT_j^*}\right) = \frac{1}{\sqrt{2\pi}} \int_{-u}^{u} \exp x \left(-\frac{z^2}{2}\right) dz, \qquad (4)$$

the right-hand part of which contains a tabulated function. System without disturbance. - In the case of n elements connected in series, the following empirical value can be found without knowing the T_j of every element:

$$\overline{T^*}(1, n) = N^{-1} \sum_{i=1}^{N} t_j, \qquad (5)$$

Formulae of the type of (2) and (3) can then be applied. If empirical values of T_j^* with dispersions DT_j^* (j = 1, 2 .., n) are known, the Kramer theorem permits constructing the "confidence intervals" for the average time $\overline{T}(1,n)$:

Card 3/6

Confidence intervals for the average .....

$$P = P\left\{\overline{T}^*(1, n) - u\sqrt{\overline{DT}^*(1, n)} < \overline{T}(1, n) < \overline{T}^*(1, n) + u\sqrt{\overline{DT}^*(1,n)}\right\} =$$

$$= \frac{1}{\sqrt{2\pi}} \int_{-u}^{u} \exp\left(-\frac{z^2}{2}\right) dz, \qquad (6)$$

where $\overline{DT}^*(1, n) = N^{-1} \sum_{j=1}^{n} T_j^{-2} \left(\sum_{j=1}^{n} T_j^{-1}\right)^{-4}, \qquad T_j = T_j^* \qquad (7)$

T_j^* being given for the same number of tests N. In the case of m parallel connected elements, and supposing that all the elements are switched on at $t = 0$, it is possible to show that, at an identical reliability of the elements, one has to be guided by reliability tests of one element. The empiric average time $\overline{T}^*(m, 1)$ will be:

$$\overline{T}^*(m, 1) = T^* \sum_{k=1}^{m} k^{-1} \qquad (8)$$

The formula for the "confidence interval" will be analogous to (4), and

Card 4/6

Confidence intervals for the average ....

$$\overline{DT}^*(m, 1) \approx N^{-1} T^{*2} \left(\sum_{k=1}^{m} \kappa^{-1}\right)^2 . \quad (9)$$

In the case of m parallel connected elements with identical reliability and average time, the empiric reliability of any k-th element

$$P_k^*(t) = \frac{1}{(k-1)!} \Gamma(k, tT^{*-1}) \quad (10)$$

has an asymptotically normal distribution with mean and dispersion respectively equal to

$$MP_k^*(t) \approx \frac{1}{(k-1)!} \Gamma(k, tT^{*-1}) \quad (11)$$

and $$DP_k^*(t) \approx \frac{1}{(k-1)!\, N} \times \frac{t}{T^*}^{2(k+2)} e^{-\frac{2t}{T^*}} \quad (12)$$

The "confidence interval' for $P_k(t)$ is obtained as in (4). System with reservation. ("pri rezervirovanii") - The analysis is limited here to the case when the

Card 5/6

Confidence intervals for the average ....

reserve set is switched on together with the main set, which contained n elements connected in series with reservation by means of breaking down into r groups (n/r elements per group). The empiric average operation time of the system without disturbance $T^*_{(n/r)}(2, r)$ has then also an asymptotically normal distribution with

$$MT^*_{(n/r)}(2, r) \approx T^*_{(n, r)}(2, r), \tag{15}$$

and

$$DT^*_{(n/r)}(2, r) \approx \frac{T^{*2}}{Nn^2}\left[\frac{1}{2} + \frac{2^{2r-1}(r-1)!\,r!}{(2r-1)!}\right]^2 \tag{16}$$

where N is the number of tests for a given element. A formula of the type of (4) is also applicable here. There are 6 Soviet-bloc references.

SUBMITTED: March 3, 1961.

Card 6/6

KRAPIVIN, V.F.; LINKOVSKIY, G.B.

Approximate solution of the differential equation $y^{(n)} = F(x,y,y',\ldots,y^{(n-1)})$ [with summary in English]. Vest. LGU no.13:166-169 '61. (MIRA 14:7)
(Differential equations)

31102
S/199/61/002/005/006/006
B112/B138

16.4500 16.6500

AUTHORS: Linkovskiy, G. B., and Krapivin, V. F.

TITLE: Numerical solution of an integro-differential equation with a quasi-linear differential operator and a generalized Volterra operator

PERIODICAL: Sibirskiy matematicheskiy zhurnal, v. 2, no.5, 1961, 797 - 800

TEXT: The authors consider an equation $L(y) - \lambda W(y) = f(x,y)$, where

$$L(y) = \sum_{i=o}^{n} p_i(x,y,y',\ldots,y^{(m_i)})y^{(n-i)} \qquad (m_i < n,\ n>1)$$

and $$W(y) = \int_a^x \sum_{j=o}^{r} K_j(x,\xi)y^{(j)}(\xi)d\xi \qquad (r<n).$$

The solution y is approximated as follows: For each interval $[x_k, x_{k+1}]$

Card 1/2

Numerical solution of an...

of a given subdivision of the interval $[a,b]$, a linear differential equation $\tilde{L}_k(y) = \lambda\tilde{\tilde{w}}_k(y) + f(x_k, \tilde{y}_k)$ is solved. The operators $\tilde{L}_k$ and $\tilde{\tilde{w}}_k$ are defined by

$$\tilde{L}_k[y] = \sum_{l=0}^{n} p_l(x_k, \tilde{y}_k, \tilde{y}'_k, \ldots, \tilde{y}_k^{(m_l)})\tilde{y}^{(n-l)}, \quad (7)$$

$$\tilde{\tilde{w}}_k[y] = \sum_{j=0}^{r} (K_{j,k,0}\tilde{y}_0^{(j)}h_0 + K_{j,k,1}\tilde{y}_1^{(j)}h_1 + K_{j,k,2}\tilde{y}_2^{(j)}h_2 + \ldots + K_{j,k,k}\tilde{y}_k^{(j)}h_k). \quad (8)$$

The error of the method is estimated. There is one Soviet reference.

SUBMITTED: May 26, 1960

Card 2/2

KRAPIVIN, V.F.; LINKOVSKIY, G.B.

Approximate solution of the Lalescu-Picard singular integral equation. Sib. mat. zhur. 2 no.6:943-945 N-D '61. (MIRA 15:7)
(Integral equations)

LINKOVSKIY, G.B., inzh.

Elementary substantiation of Bellman's principle for detecting faults in a system containing elements with different probabilities of failure and search time. Izv. vys. ucheb. zav.; energ. 4 no.3:118-119 Mr '61. (MIRA 14:3)

1. Institut radiotekhniki i elektroniki AN SSSR.
(Quality control)

29638
S/146/61/004/004/001/015
D209/D306

16,6100 (1031, 1253)

AUTHOR: Linkovskiy, G. B.

TITLE: On the theory of measurements in presence of instrument multiplication noise

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priboro-stroyeniye, v. 4, no. 4, 1961, 3 - 6

TEXT: The study of multiplication noises can be carried out in two ways: a) By investigation of the physical nature of the noise, or b) By statistical estimation of noise based on independent readings ($\beta = \alpha X$, where β is the actual reading, α - random magnitude (noise) and X - true value of measured magnitude). It is assumed here that the shape of distribution function $F_\alpha(x)$ is known. A case is examined when this function is continuous and has the probability density $p_\alpha(x)$. The measurement theory is reduced here to an optimum estimation of the non-random parameter X based on n independent measurements $y_1, y_2, \ldots, y_n$ of the random magnitude β. The probabili-

Card 1/3

On the theory of measurements ...

ty equation is, supposing that $X > 0$,

$$- nX - \sum_{i=1}^{n} y_i [p_\alpha(\frac{y_i}{X})]^{-1} \cdot p'_\alpha(\frac{y_i}{X}) = 0 \qquad (7)$$

If the latter is transcendental, the value of X can be determined approximately by calculation or by the use of Fisher's method. One must choose the real root $X = X^*$ which depends on the selected values and satisfies the conditions

$$\frac{\partial^2 \ln L}{\partial X^2}\Big|_{X=X^*} < 0$$

and the largest maximum ln L. The final formula

$$P = P(X^* - u\sqrt{DX^*} < X < X^* + u\sqrt{DX^*}) = \frac{1}{\sqrt{2\pi}} \int_{-u}^{u} e^{-\frac{v^2}{2}} dv \qquad (13)$$

Card ...

On the theory of measurements ...

represents the probability that the measured value of X lies within the corresponding limits. An important practical example is worked out for α having a uniform distribution throughout a finite interval $[0, a]$ i.e. $p_\alpha(x) = \frac{1}{a}$. This article was recommended by the Kafedra vysshey matematiki (Department of Higher Mathematics). There are 6 Soviet-bloc references.

ASSOCIATION: Institut radiotekhniki i elektroniki Akademii nauk SSSR (Institute of Radio-Engineering and Electronics AS USSR)

SUBMITTED: November 21, 1960

X

LINKOVSKIY, G.B.

Using experimental data in the reliability analysis of electronic instruments based on the Poisson distribution. Izv.vys.ucheb.zav.; prib. 4 no.5:43-46 '61. (MIRA 14:10)

1. Institut radiotekhniki i elektroniki AN SSSR.
(Electronic instruments--Testing)

KRAPIVIN, V.F., inzh.; LINKOVSKIY, G.B.

Concerning approximation methods for probability calculations of nonsymmetrical and nonsynusoidal operating conditions in electric systems. Izv. vys. ucheb. zav.; energ. 4 no.7:119-121 Jl '61. (MIRA 14:7)

1. Institut radiotekhniki i elektroniki AN SSSR.
(Electric networks)

S/143/62/000/002/005/005
D238/D301

AUTHOR: Linkovskiy, G.B., Engineer

TITLE: Laminar ultrasonic deflection at an obtuse-angle less than 180°

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Energetika, no. 2, 1962, 92 - 96

TEXT: The problem affects the question of the passage of a compression wave through the boundary of separation of two streams having identical pressure, but differing in other characteristics. Earlier works consider a uniform stream and a non-uniform stream with progressive variation in the parameters in advance of the compression wave. The case here studied involves a discontinuity in all the parameters except pressure in the stream at the head of the compression wave. The pressure is determined after the discontinuity for three angles of deflection with streams of equal pressure, but different flow velocities and densities, the three angles of deflection corresponding to equal pressure of the upper and lower

Card 1/2

Laminar ultrasonic deflection ...

laminae after the discontinuity, to greater upper pressure and to greater lower pressure. There are 7 figures and 3 references: 2 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Institut radiotekhniki i elektroniki AN SSSR (Institute of Radio-Engineering and Electronics, AS USSR)

SUBMITTED: October 13, 1961

Card 2/2

S/143/62/000/004/006/006
D238/D307

10.1200

AUTHOR: Linkovskiy, G.B., Engineer

TITLE: Some plane laminar ultrasonic flows. Laminar flow with an obtuse-angle stream greater than 180°

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Energetika, no. 4, 1962, 108 - 113

TEXT: This second paper considers the strict solution of the problem of laminar obtuse flow greater than 180° as presented in Fig. 1. A system of elementary rarefaction waves originates at point O, represented in the flow plane by the group of CE curves of the first family. In the lower stream there is Prandtl-Mayer flow in the curvilinear triangle OCF, where CEF is a curve of the second family originating in point C. It is further necessary to determine the flow between the curves of the different families Cm_1 and CEF originating in point C and relating to different streams. It is necessary to find the boundary line L of stream separation. This line is given in implicit form, as the line of equal pressures, though variable in

Card 1/2

value for both streams. A linearized solution of the problem of flow of this angle is given. A general characteristic of the linearized method is that the discontinuities of densification and the system of elementary rarefaction waves are replaced respectively by lines of densification and discontinuous rarefaction and a study is then made of the transition of these lines across the boundary of separation of two streams at 'special' points in the stream. Consequently the flow is broken up into a number of zones, basically of a triangular form, in which the current lines are straight. A further solution is provided based on the 'reflection' of the lines of densification and discontinuous rarefaction from the solid surface and the 'free' surface. The method of lincarizing ultrasonic laminar flows provides a solution both of external flow problems and internal flow such as flow from nozzles etc. There are 7 figures.

ASSOCIATION: Institut radiotekhniki i elektroniki AN SSSR (Institute of Radio Engineering and Electronics, AS USSR)

SUBMITTED: October 13, 1960

S/026/62/000/007/004/005
D050/D113

AUTHOR: Siforov, V.I., Corresponding Member, and Linkovskiy, G.B.

TITLE: Reliability in the living nature

PERIODICAL: Priroda, no. 7, 1962, 27-30

TEXT: The functional reliability of living organisms is studied, in order to find a basis for developing electronic simulators. In this connection, the works of Academician A.N. Kolmogorov are mentioned. The reliability of functional elements of living organisms is discussed and illustrated, and the probability of a breakdown or of accident-free functioning of an organ is expressed statistically in proportion to the number of elements. The reliability of living organisms is based mainly on the fact that the functions of elements failing to operate are either taken over by reserve cells or compensated through more intense work by the remaining cells. Only recently, the study of the load reserve problem in engineering was started by G.V. Druzhinin ("Radiotekhnika i elektronika", vol. 6, no. 5, 1961). There are also other reasons for the functional reliability of living organisms, such

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S/026/62/000/007/004/005
D050/D113

Reliability in the living nature

as the automatic restoration of damaged elements. There are 2 figures and 1 table.

ASSOCIATION: AN SSSR (AS USSR) (V.I. Siforov); Institut radiotekhniki i elektroniki AN SSSR (Institute of Radio Engineering and Electronics, AS USSR), Moscow, (G.B. Linkovskiy)

Card 2/2

LINKOVSKIY, G.B.

Concerning Siforov's problem on the ideal reception of a parameter transmitted on a multibeam communication channel with generalized noises. Izv. vys. ucheb. zav.; radiotekh. 5 no.2:280-283 Mr-Ap '62. (MIRA 15:7)

1. Institut radiotekhniki i elektroniki AN SSSR.
(Radio—Receivers and reception) (Information theory)

LINKOVSKIY, G.B.; KRAPIVIN, V.F.

Search for faults in complex systems. Izv. v.s. uchel. zav.; energ. 5 no.3:96 Mr '62. (MIRA 15:4)

1. Institut radiotekhniki i elektroniki AN SSSR.
(Electronic industries--Quality control)

39343
S/146/62/005/004/013/013
D295/D308

13.2970
13.2900

AUTHORS: Krapivin, V.F. and Linkovskiy, G.B.

TITLE: The mean inspection time of equipment with given fault probability

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye, v. 5, no. 4, 1962, 120-122

TEXT: The paper is concerned with the well-known problem of automating the procedure for checking and repairing multi-stage systems, the time spent on detecting the faulty condition being minimized. For a system comprising N blocks, the i-th block of which has fault probability p_i ($\Sigma p_i = 1$) and requires an inspection time t_i, the optimum search strategy (P. Bellman, Dynamic Programming, Princeton University Press, 1957) consists in starting with the block having maximum p_i/t_i ratio. Here the more general case $\Sigma p_i \leq 1$ is considered (failure to operate may also be due to external causes), and the mean search time for the optimum strategy applying in this case is evaluated:

Card 1/2

S/146/62/005/004/013/013
D295/D308

The mean inspection time ...

$$\sum_{s=1}^{N} P_s \qquad \sum_{k=1}^{N} t_k.$$

Optimum search procedures are also indicated for the following cases: When there is probability q_i of inspection leading to no information: start with minimum $t_i/p_i\ (1-q_i)$. When there is probability ν_i of inspection leading to a wrong conclusion and the time T_i needed for replacement is accounted for: start with minimum $\left[t_i + (1-\nu_i)T_i\right]/p_i$

ASSOCIATION: Institut radiotekhniki i elektroniki AN SSSR (Institute of Radio Engineering and Electronics of the Academy of Sciences USSR)

SUBMITTED: July 18, 1961

Card 2/2

KRAPIVIN, V.F.; LINKOVSKIY, G.B.

Approximate determination of the value of a parameter being transmitted through a communication channel with added Gaussian noises and Rayleigh multiplicative noises. Izv.vys.ucheb.zav.; radiotekh. 5 no.5:620-623 S-O '62. (MIRA 15:11)

1. Rekomendovana institutom radiotekhniki i elektroniki AN SSSR.
(Information theory)

LINKOVSKIY, Georgiy Borisovich, mladshiy nauchnyy sotrudnik; KRAPIVIN, Vladimir Fedorovich, mladshiy nauchnyy sotrudnik

Average time for locating faults in a system of electrical blocks. Izv.vys.ucheb.zav.; elektromekh. 5 no.9:1033-1043 '62. (MIRA 16:1)

1. Institut radiotekhniki i elektroniki AN SSSR.
(Electronic industries—Quality control)

33780
S/108/62/017/001/007/007
D271/D304

13,2960
9.2400 (1139, 1159, 1161)

AUTHORS: Siforov, V.I., and Linkovskiy, G.B., Members of the Society (see Association)

TITLE: Statistical evaluation of the reliability of "ageing" devices

PERIODICAL: Radiotekhnika, v. 17, no. 1, 1962, 62 - 67

TEXT: The authors aim at developing a method for evaluating, on a statistical basis, the danger of failure of a device, whose chances of failure grow with time; failures due to ageing and primary faults are taken into account. The danger of failure at a moment t is a(t) which is equal to the ratio of the number of devices failing in a unit time to the total number of devices operating at t; the reliability P(t) is the probability of the device not failing in the time t. When ξ is the random value of the operational life of the device

$$P\{\xi > t\} = P(t). \quad (1)$$

The probability of $\xi \leqslant t$

Card 1/5

Statistical evaluation of the ...

$$Q(t) = P\{\xi \leqslant t\} = 1 - P\{\xi > t\} = 1 - P(t). \qquad (2)$$

The danger of failure and the reliability are related by the expression

$$P(t) = \exp[-\int_0^t a(t)dt] \qquad (3)$$

and hence

$$Q(t) = 1 - \exp[-\int_0^t a(t)dt]. \qquad (4)$$

When $a(t) = \text{const.}$, reliability follows exponential law. Observations show that $a(t)$ is a continuous function of t, and the probability density of ξ is

$$p_{\xi}(t) = \frac{dQ(t)}{dt} = a(t)\exp[-\int_0^t a(t)dt], \quad t \geqslant 0. \qquad (5)$$

The precise form of $a(t)$ is not yet determined by observation; the

Card 2/5

Statistical evaluation of the ...

problem of reliability belongs to non-parametric statistics, but it can be reduced to parametric statistics: a(t) can be approximated by a polynomial of a sufficiently high order m

$$a(t) = \sum_{k=0}^{m} \lambda_k t^k, \qquad (6)$$

where λ_k are parameters of the distribution (5). The problem is thus reduced to a well known problem of optimal evaluation of a finite multitude of parameters λ_k (k = 1, 2, ..., m). Primary values of $t_1, t_2, \ldots, t_n$ are found by observing ξ on a number of identical devices, n = 30 - 50. m is usually chosen between 12 and 18. Parameters λ_k^* are found from a system of equations of the form

$$\left[\prod_{i=1}^{n}\left(\sum_{\kappa=0}^{m}\lambda_\kappa t_i^\kappa\right)\right]\cdot\sum_{i=1}^{n}\frac{t_i^{\kappa+1}}{\kappa+1}=\sum_{i=1}^{n}\left\{t_i^\kappa\cdot\prod_{\substack{j\neq i\\ 1<j<n}}\sum_{\kappa=0}^{m}\lambda_\kappa t_j^\kappa\right\},\ (\kappa=0,\ 1,\ 2,\ldots,m). \qquad (11)$$

Card 3/5

Statistical evaluation of the ...

This system can be solved for λ_k only approximately, but with any required degree of accuracy, and then an empirical function is established for a*(t)

$$a^*(t) = \sum_{k=0}^{m} \lambda_k^* t^k. \qquad (19)$$

The confidence interval for the true danger of failure a(t) is found from the formula

$$P = P[(a^*(t) - u\sqrt{Da^*(t)} < a(t) < a^*(t) + u\sqrt{Da^*(t)}] = \frac{1}{\sqrt{2\pi}} \int_{-u}^{u} e^{-\frac{w^2}{2}} dw. \qquad (22)$$

where the right-hand side is a tabulated normalized Laplace function, Da*(t) is the dispersion. The expression for the empirical reliability P*(t) of the device is

$$P^*(t) = \exp[-\int_0^t a^*(t)dt] \qquad (23)$$

Card 4/5

Statistical evaluation of the ...

and the confidence interval for true reliability is found by

$$P = P\left\{P^*(t) - w\sqrt{DP^*(t)} < P(t) < P^*(t) + w\sqrt{DP^*(t)}\right\} = \frac{1}{\sqrt{2\pi}} \int_{-w}^{w} \exp\left(-\frac{v^2}{2}\right) dv. \quad (27)$$

The method of reliability evaluation can be applied to all devices and machines as well as in the ageing problems of biological systems. There are 7 references: 5 Soviet-bloc and 2 non-Soviet-bloc.

ASSOCIATION: Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi im. A.S. Popova (Scientific and Technical Society of Radio Engineering and Electrical Communications imeni A.S. Popov) [Abstractor's note: Name of association taken from first page of journal]

SUBMITTED: May 6, 1961.

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LINKOVSKIY, G.B. (Moskva)

Advances in radio electronics. Priroda 51 no.10:113-114 O '62.
(MIRA 15:10)

(Electronic apparatus and appliances)

LINKOVSKIY, Georgiy Borisovich, inzh.; MILOVA, Tamara Petrovna, inzh.

Accuracy of voltage determination dependent on errors in the measurement of resistance and current intensity. Izv. vys. ucheb. zav.; elektromekh. 5 no.12:1419 '62. (MIRA 16:6)

1. Institut radiotekhniki i elektroniki AN SSSR.
(Electric measurements)

LINKOVSKIY, G.B., inzh., MILOVA, T.P., inzh.

Calculation of a four-terminal network. Izv. vys. ucheb. zav.; energ. 6 no.7:106-108 Jl '63. (MIRA 16:8)

1. Institut radiotekhniki i elektroniki AN SSSR.
(Electric networks)

L 17804-63 EWT(1)/BDS/EEC(b)-2 AFFTC/ESD-3/RADC/APGC Pg-4/
P1-4/Pm-4/Po-4/Pq-4
ACCESSION NR: AP3005595 S/0144/63/000/007/0791/0796

AUTHOR: Linkovskiy, G. B.

TITLE: Calculating reliability of electronic computers

SOURCE: IVUZ. Elektromekhanika, no. 7, 1963, 791-796

TOPIC TAGS: computer, computer reliability, computer reliability calculation

ABSTRACT: G. B. McCarter and J. Gold suggested (RQC, Jan 1958) four criteria of computer "dependability": (1) specific reliability, (2) repairability, (3) operability, and (4) utilization factor. The first and second criteria are mathematically investigated in the article. The specific reliability described by a probability of faultless operation for a specified time exponentially diminishes with the life of electronic computers. Average time r before the first computer fault is treated as a mathematical expectation of a random quantity; formulas for the average value and dispersion of r are derived. Also formulas for expectation and dispersion of the function of distribution of faultless-operation probability are developed, as well as formulas for calculating repairability. A numerical example illustrates the use of formulas. Orig. art. has: 37 formulas.

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KRAPIVIN, V.F.; LINKOVSKIY, G.B.

A million of calculations per second; programming of mathematical problems. Priroda 52 no.4:64-68 '63. (MIRA 16:4)

1. Institut radiotekhniki i elektroniki AN SSSR, Moskva.
(Programming (Electronic computers))

LINKOVSKIY, G.B. (Moskva)

Session dedicated to Radio Day. Priroda 52 no.7:112-113 Jl '63. (MIRA 16:8)

(Electronics--Congresses)

LINKOVSKIY, G.B.; SMUGLYY, S.I.

Bionics, its methods and results. Priroda 53 no.3:52-58 '64.
(MIRA 17:4)

L 40951-65 EED-2/EEO-2/EWT(1)/EEC(t) Pl-4/Pj-4/Pk-4/Pl-4/Pm-4/Pn-4/Pac-4 WW

ACCESSION NR: AP5006599 S/0142/64/007/006/0760/0764

57
B

AUTHOR: Linkovskiy, G. B.; Krapivin, V. F.

TITLE: Energy variational problem in radar detection within the continuous search zone

SOURCE: IVUZ. Radiotekhnika, v. 7, no. 6, 1964, 760-764

TOPIC TAGS: radar, radar detection

ABSTRACT: Based on B. O. Koopman's classic work (Operations Res., 1956, v. 1, no. 4, 324), this isoperimetric problem is formulated and theoretically solved: Given that the signal exists continuously in the $Z(z_1, z_2)$ frequency band, the place z of signal occurrence is random, the probability density $f(z)$ of signal is nonuniform, and the energy expenditure E_Σ for search is specified

$\int_{z_1}^{z_2} E(z)\,dz = E_\Sigma;\ E(z) > 0$, find the energy $E(z)$ spent for searching the signal which

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L 10951-65

ACCESSION NR: AP5006599

would maximize the density of probability of signal detection $P(E) = \int_{z_1}^{z_2} f(z)\, p[E(z)]\, dz$.
Orig. art. has: 25 formulas.

ASSOCIATION: none

SUBMITTED: 12Nov62 ENCL: 00 SUB CODE: EC, DC

NO REF SOV: 001 OTHER: 006

Card 2/2 mB

MARKAKHOVSKIY, A.Ye.; LINKOVSKIY, G.B.

Evaluation of the average time of faultless operation of equipment when the distribution law is unknown. Izv. vys. ucheb. zav.; radiotekh. 8 no.3:381-383 My-Je '65.
(MIRA 18:9)

LINKOVSKIY, G.B.

Approximate determination of the probability of correct detection during optimal reception of a signal with an unknown phase. Izv.vys.uchab.zav.; radiotekh. 8 no.4:475-478 Jl-Ag '65. (MIRA 18:11)

1. Submitted April 3, 1963.

LINKOVSKIY, G.B.

Optimal truncated probability distribution of a signal in the Shenon sense with power considerations and other conditions being constant. Izv.vys.ucheb.zav.; radiotekh. 8 no.5:589-593 S-O '65. (MIRA 18:12)

1. Submitted December 14, 1963.

LINKOVSKIY, Zh.B.

Approximation method for calculating the voltage at the input of a filter using a given output voltage. Elektrosviaz' 17 no.6:69-71 Je '63. (MIRA 16:7)

(Electric filters) (Radio filters)

LINKOVSKIY, Zh.B.

Nonparametric evaluation of the frequency and danger of equipment failure. Elektrosviaz' 17 no.9:71-72 S '63. (MIRA 16:10)

LINKOVSKIY, Zhozef Borisovich, konstruktor

Determination of the impulse transfer function of linear control systems with constant parameters. Izv.vys.ucheb. zav.;elektromekh. 7 no. 3:386-388 '64. (MIRA 17:5)

1. Spetsial'noye konstruktorskoye byuro po avtomatike Gosudarstvennogo komiteta khimicheskoy i neftyanoy promyshlennosti pri Gosplane SSSR.

ACCESSION NR: AP4038753 S/0144/64/000/004/0405/0409

AUTHOR: Linkovskiy, Zhozef Borisovich (Leading designer); Morozov, Vladimir Konstantinovich (Chief designer)

TITLE: Determining optimum impulse transient function by linearization of a nonlinear plant having one input and one output

SOURCE: IVUZ. Elektromekhanika, no. 4, 1964, 405-409

TOPIC TAGS: automatic control, nonlinear automatic control, nonlinear plant linearization, impulse transient function

ABSTRACT: The problem of an ergodic stationary random process was considered by V. V. Solodovnikov, et al., "Statistical analysis of controlled plants," Mashgiz, M., 1960, p. 122. In this article, the optimum methods of linearization of one-input one-output nonlinear plants are considered for these cases: (a) the input signal x(t) is a determinate function of time; (b) the input

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ACCESSION NR: AP4038753

signal x(t) is a nonstationary random process. General formulas for the impulse transient function and the transfer function are developed by the method of "generalized polynomial" approximation. Orig. art. has: 25 formulas.

ASSOCIATION: none

SUBMITTED: 09Feb63 DATE ACQ: 05Jun64 ENCL: 00

SUB CODE: CG, IE NO REF SOV: 005 OTHER: 000

Card 2/2

LINKOVSKIY, Zh.B.

Calculation of transient processes in nonlinear automatic control systems. Izv. vys. ucheb. zav.; elektromekh. 7 no.6: 752-753 '64. (MIRA 17:7)